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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KASTURE, DNYANESH G

ART UNIT

PAPER NUMBER

3746

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DELIVERY MODE

10/01/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/518,633	Applicant(s) ARMER ET AL.	
	Examiner DNYANESH KASTURE	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-12,14,16,18,19 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-12,14,16,18,19 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 March 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-9, 14, 16, 18, 19, 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. In Re claims 1 and 6, the third paragraph states: "...the pilot valve being configured to open to trigger a pressurisation / depressurisation cycle of the chamber of the first container in response to the liquid level in the second container FALLING below a second predetermined level, which triggers the depressurisation..". However, this is contradictory with Paragraph [0039] of the specification which states: "When the level in the chamber 310 is sufficiently HIGH the float 316 is moved to open the valve 318". In other words, the claim states that the pilot valve (318) opens when the liquid in the second container FALLS BELOW a pre-determined level whereas the specification states that the pilot valve (318) opens when the liquid in the second container (310) RISES ABOVE a pre-determined level ("sufficiently high"). Therefore the claim is indefinite.

4. For the purpose of prior art analysis, it is assumed that the applicant intended to refer to the FIRST container in the quoted part of the claim and not the second

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container - as hinted at from the language of independent Claim 10 where ONLY the first container is referenced in both pumps; The following one word change is therefore assumed instead, in the above quoted section of the third paragraph of claims 1 and 6: “the pilot valve being configured to open to trigger a pressurisation / depressurisation cycle of the chamber of the first container in response to the liquid level in the FIRST container falling below a second predetermined level, which triggers the depressurisation..”.

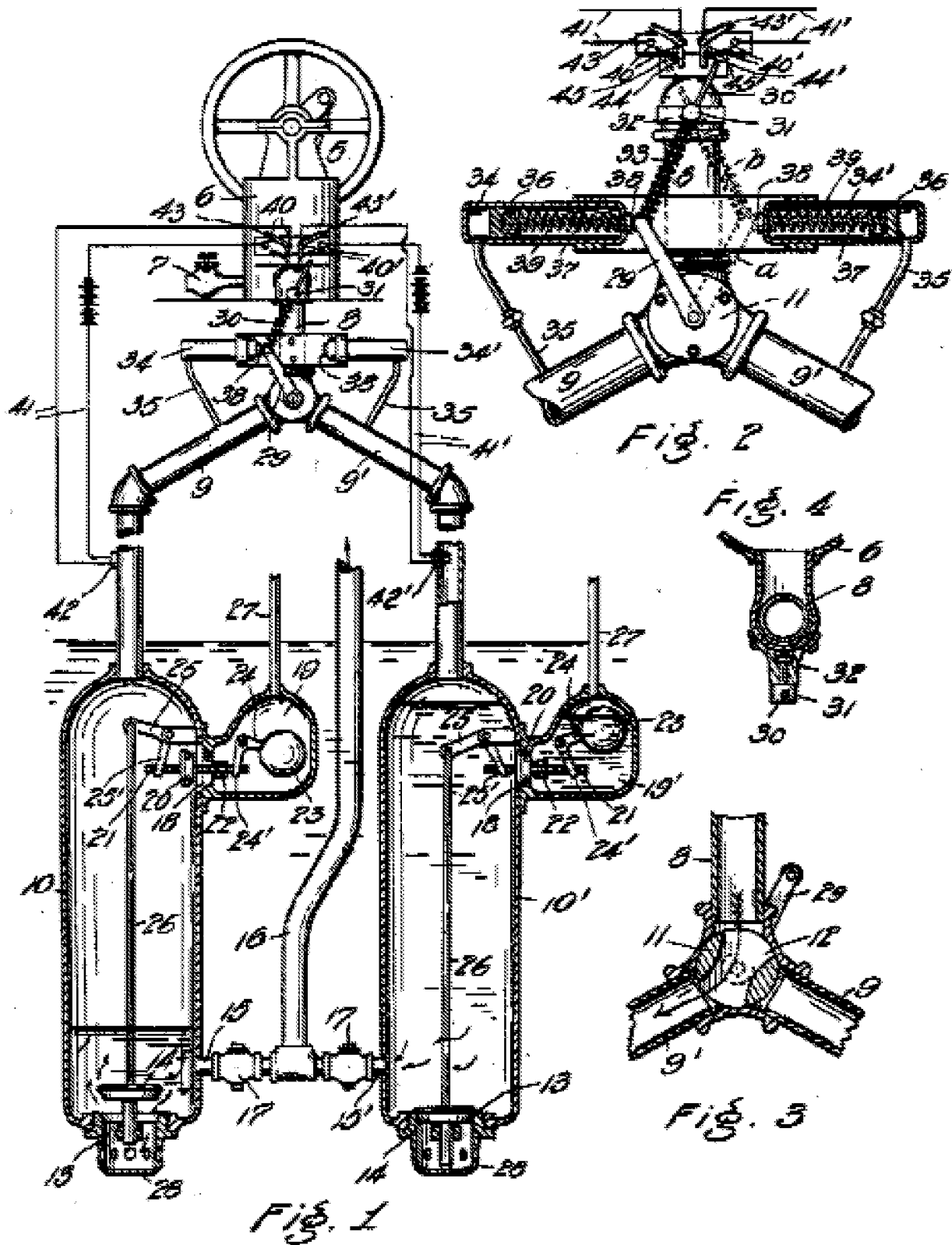
Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1,2,4,5,7,8,10,12,14,16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Emmons (US Patent 1,006,540 A).



7. In Re claim 1, with reference to Figures 1-4 as depicted above, Emmons discloses a pumping apparatus described as:

- a first container (10) including a pressurisable chamber
- an inlet (13)
- an outlet (15)
- a control apparatus (21,22,23,24,25)
- second container (19)
- pilot valve (20)
- second container (19) receiving liquid from the first container (10) through passage (18) when the liquid in the first container (10) rises to a first pre-determined level which is the level of passage (18)
- the pilot valve (20) configured to open the passage (18) thereby triggering a depressurization cycle of the chamber of the first container in response to the liquid level in the FIRST container falling below a second predetermined level (lowest level of water in the main chamber) which moves the linkage (26) and (25) and triggers the depressurization. When the float (23) rises in response to the liquid in the second container (19), the closing of the valve (20) triggers a pressurization cycle for the motive fluid that enters through pipe (9). The motive fluid exits through pipe (27) during the depressurization cycle.
- with regards to "state" of pilot valve determining pressure within a portion of the apparatus, when the pilot valve (20) opens passage (18), the pressure is not allowed to

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build up in the main chamber and when the pilot valve (20) closes passage (18), the pressure is allowed to build up in the main chamber

- with regards to "shuttle valve configured to change state in response to pressure within a portion of the apparatus", valve (11) switches position (changes state) from one main chamber to the other directly in response to pressure buildup of compressed gas in the filled chamber (portion of the apparatus)
- with regards to "state of the shuttle valve determining whether the motive gas enters into or is vented from the first container thereby implementing the pressurization/depressurization cycle", when the conduit (8) is communicating compressed gas to conduit (9'), conduit (9) is blocked off, this "state" occurs in response to build up of pressure within a portion of the apparatus - chamber (10). Conversely, when the conduit (8) is communicating compressed gas to conduit (9), conduit (9') is blocked off, this "state" occurs in response to build up of pressure within a portion of the apparatus - chamber (10'). These state changes (in response to pressure within the main chambers) along with subsequent combustion implements the pressurization/depressurization cycle.

8. In Re claim 2, Emmons discloses a non-return valve (17) intended to allow liquid to pass therethrough only when the pressure of the liquid exceeds a predetermined threshold.

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9. In Re claim 4, Emmons discloses the second container (19) which is relatively small compared to the first container (10) as depicted in Figure 1.

10. In Re claim 5, Emmons discloses the second container (19) whose base is at a relatively higher location than the base of the first container (10) as shown in Figure 1.

11. In Re claim 7, Emmons discloses a Compressor (5) supplying motive fluid to first container (10).

12. In Re claim 8, Emmons discloses cylinder (34) wherein the motive fluid is supplied to or vented from, and the cylinder (34) also operates to initiate the pressurization/depressurization cycle of the first container.

13. In Re claim 10, Emmons discloses two pumps, as described:

- a first container with a pressurizable chamber:
(10) for the first pump and (10') for the second pump
- an inlet: (13) in each of the first and second pumps
- an outlet: (15) for the first pump and (15') for the second pump
- a control apparatus:
(21,22,23,24,25) for the first pump and (21,22,23,24,25') for the second pump for causing periodic pressurization / depressurization of the main chamber (10, 10') in response to the level of liquid in the main chamber

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- the high liquid level is at the level of passage (18), the low liquid level is the lowest level of water in the main chamber (10), said low level triggers the depressurization by opening valve (14) and through linkages (26) and (25) also opening valve (20) so that combustion gases can escape into vent pipe (27)
- with regards to "shuttle valve configured to change state in response to pressure within a portion of the apparatus", valve (11) switches position (changes state) from one main chamber to the other directly in response to pressure buildup of compressed gas in the filled chamber (portion of the apparatus)
- with regards to "state of the shuttle valve determining whether the motive gas enters into or is vented from the first container thereby implementing the pressurization/depressurization cycle", when the conduit (8) is communicating compressed gas to conduit (9'), conduit (9) is blocked off, this "state" occurs in response to build up of pressure within a portion of the apparatus - chamber (10). Conversely, when the conduit (8) is communicating compressed gas to conduit (9), conduit (9') is blocked off, this "state" occurs in response to build up of pressure within a portion of the apparatus - chamber (10'). These state changes (in response to pressure within the main chambers) along with subsequent combustion implements the pressurization/depressurization cycle.
- the apparatus is arranged so that when one pump is discharging fluid, the other is receiving fluid, as depicted in Figure 1.

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14. In Re claim 12, Emmons discloses a valve (14) in each first container of the two pumps at the inlet. As depicted in Figure 1, the valves are arranged so that when one pump is charging, the other is discharging.

15. In Re claim 14, Emmons discloses the second container (19) which is relatively small compared to the first container (10) as depicted in Figure 1.

16. In Re claim 16 and 18, Emmons discloses the second container (19) whose base is at a relatively higher location than the base of the first container (10) as shown in Figure 1.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Emmons (US Patent 1,006,540 A).

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19. In Re claims 9 and 11, Emmons discloses two pumps in parallel, however it does not disclose the further valve component in each container configured to vent the motive fluid from the first container when the second vent is closed.

20. However, Emmons discloses a plug valve (11) which can be configured with the vent pipes (27), keeping one closed while the other is open.

21. It would have been obvious to a person having ordinary skill in the art at the time of the invention to install another plug valve with both vent pipes, configured to keep one vent pipe open while the other is closed for the purpose of reducing the number of components in the apparatus by using a single vent pipe for both pumps. "Common sense teaches, however, that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." KSR Int'l Co. v. Teleflex Inc. 550 U.S. ___, 82 USPQ2d 1385 (Supreme Court 2007) (KSR). In Rational A "Combining prior art elements according to known methods to yield predictable results", step 1 is met because the vent pipes (27) and plug valve (11) are disclosed by Emmons, step 2 is met because Emmons teaches how to use the plug valve for "communication between pipe (8) and either of its branches" - Column 2; lines 55-57, and step 3 is met because Emmons suggests that venting the chambers through pipe (27) is a predictable result because the pipe (27) is used in both pumps.

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22. Claims 6 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Emmons (US Patent 1,006,540 A) and in view of Jorgen (US Patent 5,582,469 A)

23. In Re claim 6, Emmons discloses that first container (10) and second container (19) are linked by a pipe/passage (18) and it also discloses all the remaining limitations of the claim except for a non return valve as set forth in the claim.

24. However, Jorgen discloses a non- return valve in Figure 2 disposed in a passage as depicted by reference (50) in Figure 1.

25. It would have been obvious to a person having ordinary skill in the art at the time of the invention to incorporate a non-return valve as taught by Jorgen into the interface (wall) between the main chamber and the float chamber of Emmons for the purpose of forming a safety line for the combusted gas in the main chamber to vent into the float chamber, in the catastrophic event of abnormal buildup of pressure in the main chamber due to failure of valving elements. Note that this emergency bypass follows the same path through the float chamber to the vent pipe (27) as before.

26. In Re claim 19, Emmons and Jorgen as applied to claims 2 and 6 disclose all the claimed limitations.

27. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Newhouse (US Patent 1,628,608) and in view of Emmons (US Patent 1,006,540 A)

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28. In Re claim 21, Newhouse discloses

- a first container (2) including a pressurisable chamber
- an inlet (8)
- an outlet (9)
- a control apparatus (20)
- with regards to steam being the motive gas, Column 1, Page 1, Lines 12-14

state: “..controlling the admission and exhaust of air or other fluid..”, the apparatus is capable of using steam as other motive fluid.

29. However, Newhouse does not disclose a second container and associated elements as set forth in the claim.

30. Nevertheless, Emmons discloses the second container receiving liquid from the first container, the second container and valves configured to determine when the pressurization/depressurization cycle takes place (as discussed above).

31. It would have been obvious to a person having ordinary skill in the art at time of the invention to modify the apparatus Newhouse to incorporate a second container and its operation as taught by Emmons as an alternative design choice for a pumping fluid accumulating in the first container.

Response to Arguments

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32. Applicant has argued that the position taken by the examiner on page 12, item 33 of the previous office action is inconsistent with the disclosure of Emmons because the water contained in the small chamber can only possibly exert an opening pressure corresponding to 6 to 8 inches of water gage, whereas the pressure in the main chamber has to be sufficiently high to keep the valve (20) closed as the water level falls during the discharge phase, therefore the pressure exerted by 6 to 8 inches water gage is not sufficient to overcome the pressure in the main chamber to open valve (20).

33. Applicant's arguments have been carefully considered, however they are not persuasive for the following reason. Page 2, Lines 77-84 of Emmons clearly state that pressure due to the weight of the water in the small chamber IS sufficient to open the valve (20): "When the water is thus driven from the drum 10' THE WEIGHT OF THE WATER WITHIN THE COMPARTMENT 19' OPENS THE VALVE 20 and then empties into the drum to be replaced by the gaseous combustion products which escape through the vent pipe 27 accelerated by the water which again enters through the inlet 13 of this drum.". It is therefore evident that the pressure in the main chamber would have to REDUCE RAPIDLY, after the initial rise from the explosion, due to EXPANSION of the combustible gases. The expansion of the combusted gas also results in its cooling. The explosion likely imparts an impulsive force that sets the column of water in motion (downward), and some amount of momentum is imparted to the column of water in the main chamber which causes part of it to escape through pipe (15). It is possible, even if it were for an instant, that the pressure in the expanding gas falls at least SLIGHTLY below the hydrostatic pressure of the pond acting on the valve (14) near the

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end of downward motion of the water column in the main chamber, while the water column continues to move downward due to inertia (only a slight amount), and this condition creates an opening bias on the valve (14) of at least a VERY SLIGHT amount thus opening the valve at least VERY SLIGHTLY. However, ANY movement of valve (14) HOWEVER SMALL is TOTALLY transmitted to at least a VERY SLIGHT movement of the linkage (26) and (25) which opens the valve (20) at least a VERY SLIGHT amount. Even if the valve (20) opens a VERY SLIGHT amount, the weight of the water in the small chamber would at least start a leak of the water into the main chamber. At this point the pressure of the pond and the weight of the water in the small chamber would assist in opening the valves (14) and (20) even further. In addition the gas in the main chamber would now experience a bias due to rising water level to urge its escape into the small chamber. Once the water in the small chamber has drained, or even simultaneous to the water being drained, the gas in the main chamber can bubble into the small chamber and escape through pipe (27). The examiner therefore respectfully disagrees with the applicant's arguments and maintains that the examiner's position is consistent with the disclosure of Emmons.

34. The examiners position is also that the length of the main chamber can be designed to be sufficiently long enough, so that the pressure of the expanding gas falls slightly below the hydrostatic pressure of the pond BEFORE the level of the falling water reaches anywhere near the level of valves (15) and (17) so that the gas cannot bubble through the delivery pipe (16) as alleged by applicant. Note that even a small drop of

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water level in the main chamber as a result of the explosion will result in some small amount of pumping action thus satisfying the function of the apparatus.

35. The applicant has also alleged that the valve of Emmons performs in reverse of the recited pilot valve however this aspect is not clear from the claims. As discussed in the 112 rejections section the specification is not consistent with the claims and is in contradiction especially with claim 1.

Conclusion

36. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DNYANESH KASTURE whose telephone number is (571)270-3928. The examiner can normally be reached on Mon-Fri, 9:00 AM to 4:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272 - 7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art
Unit 3746

DGK